

REMARKS

The specification has been amended to provide a cross-reference to the previously filed International Application. The specification has also been amended to correct typographical errors. Entry of the above amendments is earnestly solicited. An early and favorable first action on the merits is earnestly solicited.

Attached hereto is a marked-up version of the changes made to the application by this Preliminary Amendment.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

The specification has been amended to provide cross-referencing to the International Application.

The paragraph on page 6, lines 1-14, has been amended as follows:

The interpolation method disclosed in Japanese Patent Application laid-Open Hei 5 No. 30487 is an invention which adopts interpolation on a pixel row basis and provides improved processing speed compared to a typical interpolation on a pixel basis. However, in order to determine the edge of the pixel row, arithmetic operations between lines should be performed for the rows of at least three pixels to, more or less, eleven pixels while shifting pixels around the edge vicinity, hence the aspect of the long time requirement for arithmetic operations is still unsolved in this method. Further, this interpolation method is aimed at smoothing the outlines of [pixels] images hence has the problem of inability to restore a pattern if the pattern has gaps at inter-lines as in an image depicted with nearly horizontal fine lines.

The paragraph on page 23, lines 7-12, has been amended as follows:

Interpolation implementing portion 140, is comprised of a pixel-row match searching portion 141, a search condition setup portion 142,[a pre-interpolation pixel row setup portion 142,] a pre-interpolation pixel row setup portion 143, a matching pixel-

row operating portion 144 and a correcting means 145.

The paragraph on page 23 lines 22-25 continuing on page 24, lines 1-2, has been amended as follows:

In this drawing, A, C, E, G and I designate input visual lines, and B, D, F, H designate lines to be interpolated. Designated at 21(A33 to A35), 22(C27 to C31), 23(E21 to E25), 24(G15 to G19) and 25([i10 to i13])(I10 to I13), are black pattern portions depicting inclined fine line pattern 2. The other area represents white pattern portions.

The paragraph on page 26 lines 22-25 continuing on page 27, lines 1-13, has been amended as follows:

When the virtual interpolation data is input from virtual interpolation database 120 to first matching pattern search portion 131 of interpolation segment determining processor 130, first matching pattern search portion 131 searches for matching patterns as to each of virtual interpolation line patterns 41 to 44 and 51 to 54. For example, referring to a search for matching patterns of virtual interpolation line pattern 42, the segment of 21, 22, [23 and 24] 23, 24 and 25 on the virtual interpolation line D, based on the search range set up in search condition setup portion 133 and based on the matching judgment conditions such as the sign, segment length, average differential luminance value etc., set in matching pattern condition setup portion 132, virtual interpolation line patterns matching virtual interpolation line

pattern 42 are searched for from the virtual interpolation line patterns located below, to the lower left and to the right on the line F, as indicated by the arrows shown in Fig 5.

The paragraph on page 33 lines 7-16, has been amended as follows:

In Fig. 10, visual pixel rows (black) are designated by 21 to 25(A33 to A34, C27 to C31, E21 to E25, G15 to G19 and I10 to I13); interpolation-designated segments(-) are designated by 41 to 44(B27 to B31, D21 to D25, F15 to F19 and H10 to H13), interpolation-designated segments(+) are designated by 51 to 54(B33 to B34, D27 to D31, F21 to F25 and H15 to [19] H19); and pre-interpolation pixel rows are designated by 61 to 64 and 71 to 74(A30 to A34, C24, to C28, C30, to C34, E18 to E22, E24, to E28, G12 to G16, G18 to G22 and I12 to I16).

The paragraph on page 33 lines 17-21, has been amended as follows:

In Fig.11, visual pixel rows(black) are designated by 21 to 25(A33 to A34, C27 to C31, E21 to E25, G15 to G19 and I10 to I13); and interpolation pixel rows are designated by 81 to 84(B27 to B31, B33 to B34, D21 to D25, D27 to D31, F15 to F19, F21 to [F15] F25 H10 to H13 and H15 to H19).

The paragraph on page 33 lines 22-25 continuing on page 34, lines 1-4 has been amended as follows:

First, referring to an example of setting up a pixel row for interpolation in interpolation-designated segment [42(D-21 to 25)] 42(D21 to D25), pre-interpolation pixel row setup portion 143, based on the segment starting positions and length data of interpolation-designated segments 42 and 43([D-21] D21 to D25, [F-15] F15 to F19) obtained from virtual interpolation database 120, sets up pre-interpolation pixel rows 62 and 63(C24 to C28, E18 to E22), on lines C and E.

The paragraph on page 34 lines 16-22, has been amended as follows:

Then, the average of pixel data of C24 and E18 of pre-interpolation pixel rows 62 and 63(C24 to [C26] C28 and E18 to E22) is calculated to produce the pixel data of D21 of interpolation pixel row 82(D21 to D25). Thus, average of pixel data is calculated sequentially up to C28 and E22 so as to produce the pixel data of interpolation pixel row 82(D21 to D25).